



Department of Toxic Substances Control



Agency Secretary
Cal/EPA

1011 North Grandview Avenue
Glendale, California 91201-2205

Arnold Schwarzenegger
Governor

November 19, 2004

CERTIFIED MAIL

Mr. Steve Lafflam
The Boeing Company
Rocketdyne Propulsion & Power
6633 Canoga Avenue
P.O. Box 7922
Canoga Park, California 91309-7922

CLASS 2 PERMIT MODIFICATION OF TWO POST CLOSURE PERMITS -- BOEING-ROCKETDYNE SANTA SUSANA FIELD LABORATORY AREAS I AND III (EPA ID NUMBER CAD093365435) AND NASA/BOEING SANTA SUSANA FIELD LABORATORY AREA II (EPA ID NUMBER CA1800090010)

Dear Mr. Lafflam:

The Department of Toxic Substances Control (DTSC) received a Class 2 Permit Modification Request from The Boeing Company (Boeing), dated May 28, 2003 for the following post-closure permits at the Santa Susana Field Laboratory (SSFL), Ventura County (herein referred to as Areas I & III Post-Closure Permit and Area II Post-Closure Permit, respectively):

- Hazardous Waste Facility Post-Closure Permit, The Boeing Company, Rocketdyne Propulsion and Power, Santa Susana Field Laboratory, Areas I and III, Simi Hills, Ventura County, CA, Permit Number PC-94/95-3-02, Facility EPA ID Number CAD093365435.
- Hazardous Waste Facility Post-Closure Permit, National Aeronautic & Space Administration / The Boeing Company, Santa Susana Field Laboratory, Area II, Simi Hills, Ventura County, CA, Permit Number PC-94/95-3-03, Facility EPA ID Number CA1800090010.

DTSC reviewed Boeing's Class 2 Permit Modification Requests. In addition, DTSC reviewed comments received during the public comment period from June 3 to August 4, 2003.

Pursuant to California Code of Regulations, title 22, section 66270.42, DTSC hereby grants Boeing the requested Permit Modifications with the exceptions and changes explained in this letter and in Attachment A.

DTSC's Geological Services Unit (GSU) reviewed the groundwater monitoring portion of the permit modification request. GSU submitted comments in a groundwater monitoring memo from Mr. Thomas M. Seckington, C.Hg dated September 10, 2004 and is enclosed. The GSU groundwater monitoring memo is incorporated into Attachment A.

GSU also reviewed the submitted Water Quality Sampling and Analysis Plan (WQSAP). GSU submitted comments in a WQSAP memo from Mr. Thomas M. Seckington, C.Hg dated September 10, 2004 and is enclosed.

Within 45 days of receipt of this letter, The Boeing Company shall finalize the Water Quality Sampling and Analysis Plan (WQSAP). The finalized WQSAP shall include the correction and/or modifications described in this letter, Attachment A, and the GSU WQSAP memo. In addition, Boeing shall submit copies of the finalized WQSAP to the information repositories established for SSFL.

California Code of Regulations, title 22, Section 66264.142 requires owners or operators of a hazardous waste management facility to prepare and submit a detailed written estimate, in current dollars, of the cost to close a treatment/storage facility and/or the cost of maintaining a postclosure facility. DTSC reviewed the cost estimates for the two post closure permits and found them inadequate in detail. Please revise your cost estimates by December 31, 2004 to better reflect the activities discussed in the closure plan for the groundwater treatment systems and the postclosure care of the closed surface impoundments discussed in the Post Closure Care Plan. Please be reminded that Boeing must provide financial assurance for closure and postclosure care for the facilities in the Postclosure Permit covering Area I and III under the EPA ID Number CAD093365435, as required by California Code of Regulations, title 22, Section 66264.143. The Postclosure Permit for Area II under EPA ID Number CA1800090010 is for a federal facility and exempt from financial assurance requirements.

The determination of the Class 2 Permit Modification is subject to the California Environmental Quality Act (CEQA). DTSC will file a CEQA Notice of Exemption with the Office of Planning and Research, State Clearinghouse pursuant to California Code of Regulations, Title 14, Section 15061(b)(3).

The approval of a Class 2 Permit Modification Request represents a permit decision that may be appealed in accordance with the California Code of Regulations, title 22, section 66271.18. Enclosed are the signed Permit Modifications which become effective on December 23, 2004 unless a petition for review is filed. The 30 day period within which a person may request review begins on November 23, 2004 and ends on December 22, 2004. The petition must be sent to:

Mr. Steve Lafflam
November 19, 2004
Page 3

Mr. Watson Gin, P.E.
Deputy Director
Hazardous Waste Management Program
Department of Toxic Substances Control
1001 I Street
P.O. Box 806
Sacramento, California 95812-0806

A copy of the petition should also be sent to:

Mr. Jose Kou, P.E., Chief
Southern California Permitting and Corrective Action Branch
Department of Toxic Substances Control
1011 North Grandview Avenue
Glendale, California 91201

The petition shall include a statement of the reasons supporting the request for review, including a demonstration that any issues being raised were raised during the public comment period and when appropriate, a showing that the condition in question is based on:

- 1) a finding of fact or conclusion of law which is clearly erroneous, or
- 2) an exercise of discretion or an important policy consideration which DTSC should review.

If you have any further questions concerning this permit modification, you may contact Mr. Stephen Baxter, P.E., at (818) 551-2940.

Sincerely,

Jose Kou, P.E., Chief
Southern California Permitting and Corrective Action Branch
Hazardous Waste Management Program

Enclosures

Certified Mail
7003 3110 0000 3780 4742
Return Receipt Requested

cc: see next page

Mr. Steve Lafflam
November 19, 2004
Page 4

cc: Mr. Allen Elliot
NASA-Marshall Space Flight Center
Mail Stop AE01
Huntsville, Alabama 35812

Mr. Art Lenox
The Boeing Company
Rocketdyne Propulsion & Power
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P.O. Box 7922
Canoga Park, California 91309-7922

Mr. David Chung (w/o enclosures)
The Boeing Company
Rocketdyne Propulsion & Power
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Mr. Sheldon Clark (w/o enclosures)
Haley & Aldrich, Inc.
326 South Wilmot, Suite A200
Tucson, AZ 85711-4029

Mr. Steve Armann (w/o enclosures)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, California 94105

Mr. Watson Gin (w/o enclosures)
Deputy Director
Hazardous Waste Management Program
Department of Toxic Substances Control
1001 I Street
P.O. Box 806
Sacramento, California 95812-0806

Ms. Barbara Coler, Chief (w/o enclosures)
Permitting and Corrective Action Division
Hazardous Waste Management Program
Department of Toxic Substances Control
700 Heinz Avenue, Suite 200
Berkeley, California 94710

Mr. Steve Lafflam
November 19, 2004
Page 5

cc: Ms. Karen Baker, C.E.G., Chief
Geology, Permitting and Corrective Action Branch
Hazardous Waste Management Program
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, California 90630

Mr. James Pappas, P.E., Chief
Northern California Permitting and Corrective Action Branch
Hazardous Waste Management Program
Department of Toxic Substances Control
8800 Cal Center Drive
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Mr. Mohinder Sandhu, P.E., Chief
Standardized Permitting and Corrective Action Branch
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Ms. Pauline Batarseh (w/o enclosures)
Unit Chief
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Mr. Stephen Baxter, P.E.
Southern California Permitting and Corrective Action Branch
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Mr. Gerard Abrams (w/o enclosures)
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Mr. Steve Lafflam
November 19, 2004
Page 6

cc: Mr. Tom Seckington (w/o enclosures)
Geology, Permitting and Corrective Action Branch
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5796 Corporate Avenue
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Mr. Hossein Nassiri (w/o enclosures)
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1001 I Street
P.O. Box 806
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Ms. Bridget Fitzsenry (w/o enclosures)
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P.O. Box 806
Sacramento, California 95812-0806

ATTACHMENT A
to the
Letter of Determination
for the
Class 2 Permit Modification Request
The Boeing Company
Santa Susana Field Laboratory

November 19, 2004

The Department of Toxic Substances Control (DTSC) received a Class 2 Permit Modification Request from The Boeing Company (Boeing), dated May 28, 2003, for the following post-closure permits at the Santa Susana Field Laboratory, Ventura County (herein referred to as Areas I & III Post-Closure Permit and Area II Post-Closure Permit, respectively):

Hazardous Waste Facility Post-Closure Permit, The Boeing Company, Rocketdyne Propulsion and Power, Santa Susana Field Laboratory, Areas I and III, Simi Hills, Ventura County, CA, Permit Number PC-94/95-3-02, Facility EPA ID Number CAD093365435.

Hazardous Waste Facility Post-Closure Permit, National Aeronautic & Space Administration / The Boeing Company, Santa Susana Field Laboratory, Area II, Simi Hills, Ventura County, CA, Permit Number PC-94/95-3-03, Facility EPA ID Number CA1800090010.

The following determinations and/or modifications are made with respect to Boeing's Class 2 Permit Modification Request. These were developed after DTSC reviewed the information submitted with Boeing's Request, information available in the Administrative Record, and public input received during the public comment period. Items marked with an asterisk (*) indicates future action required. This document is attached to the determination letter dated November 19, 2004.

- 01) The outline of both Post Closure Permits were adjusted to accommodate the modifications of the permit. Both outlines are almost identical. Both Permits' pagination was adjusted so that major sections fell on the same page on both permits.
- 02) In Part I, Section I.A.2, DTSC rewrote this section from the Boeing's requested modification. The change was for clarification only and did not add or remove any permit conditions. This change is shown below for the Area I/III Post-Closure Permit. A similar change was done for the Area II Post-Closure Permit.

1995 PERMIT FOR AREA I/III:

In 1995, the site-wide groundwater extraction and monitoring systems drew from 30 wells and a single french drain/sump at ECL in Area III. In addition, a total of approximately 210 onsite wells, off-site wells and springs are currently being sampled to assess groundwater conditions at the site. Under the conditions of this Permit, Boeing-Rocketdyne will be specifically sampling 6 background, 19 detection, 7 points of compliance, 35 monitoring points, and 28 interim corrective measures wells. The number of wells in each category will vary under specific circumstances spelled out in this Permit as data is evaluated and as additional wells are installed.

BOEING'S REQUEST FOR AREA I/III PERMIT:

The facility groundwater extraction and treatment system currently consist of about 30 wells and a single french drain/sump at ECL in Area III. In addition, a total of 258 onsite wells, off-site wells and springs are currently being monitored to access groundwater conditions at the site under the terms of a stipulated order of consent between Rockwell International and the State of California dated November 16, 1992. Under the conditions of this post closure permit, Boeing will be specially/sicl monitoring 7 background wells, 10 detection monitoring wells, 7 point of compliance wells, 23 monitoring points and 26 interim corrective measures wells. The number of wells in each cataegory/sicl will vary under specific circumstances spelled out in this permit as data is evaluated, and as additional wells are installed.

DTSC MODIFICATION:

The Post-Closure Permit for Areas I and III describes the post-closure care for five closed surface impoundments and the operation of five groundwater treatment systems.

The five groundwater treatment systems draw from a total of 23 extraction wells plus a french drain/sump located in Area III ECL.

The groundwater monitoring program for the five closed surface impoundments include 25 monitoring wells including background wells, point-of-compliance wells, detection monitoring program wells and evaluation monitoring program wells. (NOTE: some wells serve more than one function). Under the conditions of this post closure permit for Areas I and III, Boeing will monitor 6 background wells, 6 point of compliance wells, 9 detection monitoring wells, and 20 evaluation monitoring points

In addition, a total of 258 on-site wells, off-site wells and springs are monitored throughout SSFL to assess groundwater conditions under the terms of a Corrective Action Order dated November 12, 1992.

- 03) DTSC altered the language of the requested modifications under section V.B.

BOEING'S REQUEST:

"Until such time as a corrective action program is approved and incorporated into this permit, the Owner and/or Operator shall monitor and maintain groundwater wells as required ~~under interim remedial measures~~ as required under the provisions of the facility Water Quality Sampling and Analysis Plan (WOSAP).

DTSC MODIFICATION:

"Until such time as a corrective action program is approved and incorporated into this permit, the Owner and/or Operator shall monitor and maintain groundwater wells as required under interim remedial measures. The facility Water Quality Sampling and Analysis Plans includes provisions for the interim remedial measures."

[POINT OF COMPLIANCE]

- 04) A paragraph was added to both post closure permits in section V.D.1 that indicates the point of compliance wells in the 1995 Permit. The PoC wells for the 1995 Permit are separate from the newly established point of compliance wells listed in Table 1. The 1995 PoC wells were retained in the permit for reference.
- 05) Both post closure permits establish the sampling frequency for the point-of-compliance well as quarterly for Table 4 (Constituents of Concern) and annually for Appendix IX parameters. Boeing's request appeared to have been either semi-annually for Constituents of Concern, or "Once for new wells, thereafter every 5 years." Sampling parameters and frequency for point of compliance wells are placed in Section V.D.1. DTSC will allow quarterly sampling at the point-of-compliance wells for Table 4 Constituents of Concern to be reduced to semi-annual sampling for Table 4 Constituents of Concern after one year of quarterly sampling, unless the data indicates more frequent sampling is warranted. In addition, the point-of-compliance wells shall be sampled annually for Appendix IX parameters.

- 06) Two paragraphs were added after the Point of Compliance Table 1 in section V.D.1. These paragraphs describe the sampling for the point-of-compliance wells.

The point-of-compliance wells (Table 1) shall be sampled quarterly for the monitoring parameters listed in Table 4 (Constituents of Concern) for at least one year. After one-year, DTSC will evaluate the data. Based on the data, sampling at point-of-compliance wells for Table 4 Constituents of Concern may be changed to semi-annual, unless the data indicates more frequent sampling is warranted.

The point-of-compliance wells (Table 1) shall be sampled annually for Appendix IX parameters.

[BACKGROUND]

- 07) In both post closure permits, Section V.D.2 "Background Monitoring Wells" has been expanded to include requirements for background wells, as giving in the regulations, sections 66264.97(b)(1)(A), -(b)(1)(B)(3), -(b)(1)(C)(2), and -(b)(1)(D)(2).

BOEING'S REQUEST:

The Owner and/or Operator shall establish a groundwater monitoring system for each regulated unit that includes a sufficient number of background monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the regulated unit. [Cal. Code Regs., tit. 22, §66264.97, subsec. (b)(1)(A)].

DTSC MODIFICATION:

The Owner and/or Operator shall establish a background groundwater monitoring system for each regulated unit that includes

- a. a sufficient number of background monitoring points installed at appropriate locations and depths to yield groundwater samples from the uppermost aquifer that represent the quality of groundwater that has not been affected by a release from the regulated unit. [Cal. Code Regs., tit. 22, § 66264.97, subsec. (b)(1)(A)]
- b. for a detection monitoring program, a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples from other aquifers, low-yielding saturated zones and from zones of perched water as necessary to provide the best assurance of the earliest possible detection of a release or continued release from a regulated unit. [Cal. Code Regs., tit. 22, § 66264.97, subsec. (b)(1)(B)(3)]
- c. for an evaluation monitoring program, a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples from other aquifers, low-yielding saturated zones and from zones of perched water as necessary to provide the data needed to evaluate changes in water quality due to the release from the regulated unit. [Cal. Code Regs., tit. 22, § 66264.97, subsec. (b)(1)(C)(2)]
- d. for a corrective action program, a sufficient number of monitoring points and background monitoring points installed at appropriate locations and depths to yield groundwater samples from other aquifers, low-yielding saturated zones and from zones of perched water as necessary to provide the data needed to evaluate compliance with the water quality protection standard and to evaluate the effectiveness of the corrective action program. [Cal. Code Regs., tit. 22, § 66264.97, subsec. (b)(1)(D)(2)]

- 08) In both post closure permits, the "Designated background wells" in Section V.D.2 were retained, for future reference. Text was added to distinguish the old background wells with the newly established background wells, which are contained in a new table.

- 09) For both post closure permits, a new table was inserted in section V.D.2 which contain the background wells and their assigned regulated unit. The new table is labeled: "Table 2 Background Monitoring Wells".
- 10)* For both post closure permits, DTSC kept Table 4 "Background Monitoring Parameters" and relabeled "Table 4 - Background Monitoring Parameters" to "Table 3 - Background General Water Quality Parameters" and moved this table to section V.D.2 "Background Monitoring Wells".
- 11) Both post closure permits establish sampling criteria for background wells in Section V.D.2. DTSC decided to establish the sampling for the background wells quarterly for background parameters (Table 3) and quarterly for constituents of concern (Table 4), both for a period of one year, then annually thereafter. Boeing's modification request appear to be quarterly for the Monitoring Parameters and quarterly for CoC for one year and every five years thereafter. A paragraph in Section V.D.2, after Table 2, was modified to describe the sampling of the background wells.

In order to establish background concentrations for the constituents of concern and to select an appropriate statistical method, the Owner and/or Operator shall sample ~~designated~~ the background monitoring wells (Table 2) for those chemical constituents and physical parameters listed in Tables 3 (Background General Water Quality Parameters) and Table 4 (Constituents of Concern) on a quarterly basis for a period of at least 1 year. Background wells shall then be tested for Table 3 and Table 4 parameters annually.

- 12)* APTF BACKGROUND WELL PZ-003: Piezometer well PZ-003 is indicated as a background well for APTF-1. DTSC has determined that PZ-003 was not properly constructed and/or developed and may present a risk of providing a conduit between the perched zone and the underlying Chatsworth formation. DTSC requires PZ-003 be either reconstructed or properly abandoned. If PZ-003 cannot be properly established, then a background well must be established for APTF-1 to take PZ-003's place.
- 13)* APTF BACKGROUND WELL HAR-24: Monitoring well HAR-24 is proposed background well for APTF-1 and APTF-2. DTSC has determined that HAR-24 is probably impacted by the release from APTF-1 and/or APTF-2 and cannot be reliably used as a background well for the units. Replacement background well(s) must be selected and/or constructed for HAR-24. The post-closure permit will be changed when a new well is established.
- 14)* APTF BACKGROUND WELL HAR-02: Monitoring well HAR-02 is proposed background well for APTF-2. DTSC has determined that HAR-02 is probably impacted by the release from APTF-2 and cannot be reliably used as a background well for the units. Replacement background well(s) must be selected and/or constructed for HAR-02. The post-closure permit will be changed when a new well is established.
- 15)* NEW APTF-1 and APTF-2 BACKGROUND WELLS - PERCHED: DTSC requires establishing new background wells for APTF-1 and APTF-2 to provide background information from the uppermost groundwater and from the perched groundwater under APTF-1 and APTF-2. The post-closure permit will be changed when the new wells are established.
- 16)* BOEING PROPOSED ABSP BACKGROUND WELLS HAR-11: Boeing proposed shallow well HAR-11 as a background well for Alfa/Bravo Skim Pond (ABSP) in Area II. Data indicates that HAR-11 is impacted from previous released by ABSP and may be inappropriate as a background well. HAR-11 was removed in the Area II post closure permits as a background well for ABSP.

- 17)* **BOEING PROPOSED ABSP BACKGROUND WELLS PZ-070:** Boeing proposed shallow well PZ-070 as a well for Alfa/Bravo Skim Pond (ABSP) in Area II. Data could not be found for PZ-070 to adequately make a determination. Well PZ-070 was accepted in the modification with the intention of further review. If PZ-070 is unable to yield sufficient water for sampling, or if it is found to be impacted by releases from ABSP, then another well must be located as a replacement.
- 18) **DTSC ADDED BACKGROUND WELL ABSP PZ-059:** DTSC added PZ-059 as an additional background well for ABSP in the Area II permit, specifically for monitoring the background of the perched zone. If PZ-059 is unable to yield sufficient water for sampling, or if it is found to be impacted by releases from ABSP, then another well must be located as a replacement.
- 19)* **ADDITIONAL ABSP BACKGROUND WELL NEEDED:** DTSC has determined that an additional background well is needed for the uppermost aquifer at ABSP in Area II. DTSC believes HAR-19 may be sufficient if deepened to yield water samples year round. HAR-19 was not added to the post closure permit at this time.
- 20)* **BOEING PROPOSED DELTA BACKGROUND WELLS PZ-004B:** Piezometer PZ-004B is proposed as background wells for the Delta Pond in Area II. No data was available for PZ-004B and water level indicates this well may be dry most of the time. DTSC decided to remove PZ-004B because it would be unable to yield sufficient water for sampling.
- 21)* **BOEING PROPOSED DELTA BACKGROUND WELL HAR-08:** Data indicates that HAR-08 has been impacted by releases from the Delta Pond and, therefore, is an inappropriate background well for Delta. Another well must be chosen and/or constructed to replace HAR-08 as a background well for the Area II Delta Pond.
- 22)* **ADDITIONAL DELTA BACKGROUND WELL NEEDED:** DTSC removed both proposed background wells for Delta. A background well for Delta must be located.

[CONSTITUENTS OF CONCERN]

- 23) In both post closure permits, the Constituents of Concern table has been relabeled from "Table 3 - Constituents of Concern" to "Table 4 - Constituents of Concern and Concentration Limits". Some of the chemical names have been expanded to include the common full name or a common alternative name.
- 24) The Constituents of Concern table (now Table 4) has been sectioned into sublists. The top sublist contains the chemicals applicable to all of the regulated units. Subsequent sublists contain chemicals which only applied to regulated units indicated in the sublist heading.

- 25) The lists of chemicals in Table 4 Constituents of Concern included all of the chemicals from Boeing's proposed modification, to be applied to all regulated units (surface impoundments). The list of constituents to be applied to all regulated units is the same for both permits. The following chemicals were added to Table 4 in both permits to be applied to all regulated units:

- perchlorate EPA Method 314.0

- 26) DTSC divided Table 4 Constituents of Concern into a number of sublists. The top list is constituents applicable for all regulated units under the respective permit. Additional constituents are listed below this sublist under their respective regulated unit. These additional, unit-specific constituents were determined from the constituents listed under "Waste Characteristics" in the "Supplemental Data Summary for the Water Quality Sampling and Analysis Plan" dated May 2003. The additional constituents are shown below. Those constituents crossed off where not added to the final permit modification.

FOR APTF 1 and APTF 2

pH	EPA 9040B
hydrogen peroxide	EPA 9040B
monomethyl hydrazine (MMH)	DTSC-approved GC method
hydrazine	DTSC-approved GC method OR ASTM D1385(2001) for hydrazine in water
isopropyl alcohol, 2-propanol	EPA 8260B
RP-1	EPA 8015 DRO; 8260B
carbon chain ID	EPA 8015 DRO
naphthene	EPA 8260B
JP-4 jet fuel	EPA 8015 DRO; 8260B
JP-1 jet fuel	EPA 8015 DRO; 8260B
volatile organic compounds	EPA 8260B
chlorinated fluorocarbons	EPA 8260B
miscellaneous chlorinated solvents	EPA 8260B or appropriate
semi-volatile organics compounds (phalates)	EPA 8270
unsymmetrical dimethylhydrazine (1,1-dimethylhydrazine), (UDMH)	DTSC-approved GC method

FOR ABSP

RP-1	EPA 8015 DRO; 8260B
JP-4 jet fuel	EPA 8015 DRO; 8260B
JP-1 jet fuel	EPA 8015 DRO; 8260B
chlorinated fluorocarbons	EPA 8260B
miscellaneous chlorinated solvents	EPA 8260B or appropriate
oil	EPA 8015 DRO; 8260B
1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a)	EPA 8260B

FOR DELTA

pH	EPA 9040B
hydrogen peroxide	EPA 9040B
RP-1	EPA 8015 DRO; 8260B
carbon chain ID	EPA 8015 DRO
naphthene	EPA 8260B
JP-4 jet fuel	EPA 8015 DRO; 8260B

JP-1 jet fuel	EPA 8015 DRO; 8260B
volatile organic compounds	EPA 8260B
unsymmetrical dimethylhydrazine	
(1,1-dimethylhydrazine), (UDMH)	DTSC-approved GC method

FOR ECL

pH	EPA 9040B
sulfuric acid	EPA 375.4
sodium azide	DTSC-approved method
Freon	EPA 8260B

FOR STL-IV 1 and STL-IV 2

pH	EPA 9040B
hydrogen peroxide	EPA 9040B
monomethyl hydrazine (MMH)	DTSC-approved GC method
hydrazine	DTSC-approved GC method OR ASTM D1385(2001) for hydrazine in water
isopropyl alcohol, 2-propanol	EPA 8260B
chlorinated fluorocarbons	EPA 8260B
miscellaneous chlorinated solvents	EPA 8260B or appropriate
unsymmetrical dimethylhydrazine	
(1,1-dimethylhydrazine), (UDMH)	DTSC-approved GC method

FOR SPA 1 and SPA 2

pH	EPA 9040B
hydrogen peroxide	EPA 9040B
monomethyl hydrazine (MMH)	DTSC-approved GC method
hydrazine	DTSC-approved GC method OR ASTM D1385(2001) for hydrazine in water
isopropyl alcohol, 2-propanol	EPA 8260B
RP-1	EPA 8015 DRO; 8260B
carbon chain ID	EPA 8015 DRO
naphthene	EPA 8260B
JP-4 jet fuel	EPA 8015 DRO; 8260B
JP-1 jet fuel	EPA 8015 DRO; 8260B
volatile organic compounds	EPA 8260B
chlorinated fluorocarbons	EPA 8260B
miscellaneous chlorinated solvents	EPA 8260B or appropriate
unsymmetrical dimethylhydrazine	
(1,1-dimethylhydrazine), (UDMH)	DTSC-approved GC method

In addition, the unit-specific lists that contained fuel constituents -- RP-1, JP-1, JP-4 -- were consolidated to "kerosene fuel (RP-1, JP-1, JP-4)".

[SECTION V.F. APPENDIX IX]

- 27) In both Permits, Boeing requested to add two paragraphs under Section V.F. Appendix IX. Imbedded in the second paragraph was the following sentence:

"Interim Corrective Measure Wells are not subject to the annual Appendix IX sampling requirements."

DTSC denied this request and did not include the sentence. A new paragraph was started where this sentence was removed. DTSC decided that this sentence was not necessary. DTSC was concerned that if this sentence were left in place, an Interim Corrective Measures Well may be exempt from possible Appendix IX sampling if that well was later deemed appropriate for Appendix IX sampling. Other sections of the permit specifically spell out which wells are to be considered for Appendix IX. Also, the requirements on the Interim Corrective Measures Wells do not require Appendix IX sampling at this time.

- 28) In both permit under Section V.F., the following sentences, requested to be added, was expanded as follows:

"The owner or operator shall analyze samples from all monitoring points in the affected medium (groundwater, surface water or the unsaturated zone) for all constituents contained in Appendix IX (Cal. Code Regs., tit. 22, div. 4.5, chapter 14, appendix IX) at least annually to determine whether additional hazardous constituents are present and, if so, at what concentration(s)."

"If the owner or operator finds Appendix IX constituents in the groundwater, surface water or the unsaturated zone that are not already identified in the permit as constituents of concern, the owner or operator may resample within one month and repeat the analysis for those constituents."

These additions are consistent with California regulations.

- 29) Under Section V.F., DTSC recognized that Appendix IX sampling need only be performed on those wells known or suspected to be in an affected medium. Those wells that are in a groundwater monitoring program which are not in an affected medium do not require Appendix IX sampling. However, a release from a regulated unit that has reached or is suspected to have reached a sampling point must abide by the Appendix IX sampling requirements. DTSC added the following language to Section V.F.:

The owner or operator shall analyze samples from all monitoring points in the affected medium (groundwater, surface water or the unsaturated zone) for all constituents contained in Appendix IX (Cal. Code Regs., tit. 22, div. 4.5, chapter 14, appendix IX) at least annually to determine whether additional hazardous constituents are present and, if so, at what concentration(s). [Cal. Code Regs., tit. 22, § 66264.99, subsec. (c)(6)]

Unless indicated otherwise in this permit, Appendix IX sampling at monitoring points in the affected medium shall include monitoring points at the point of compliance, monitoring points in the detection monitoring program and monitoring points in the evaluation monitoring program that have been established for each regulated units. Appendix IX sampling is not required for monitoring points outside the affected medium until and/or unless releases from a regulated unit reach or is suspected to have reached the monitoring point.

- 30) In both permits under Section V.F., Boeing proposed the following strikeout/addition to the last paragraph of this section:

The Owner and/or Operator will analyze ~~samples~~ **samples on the frequency and** for those constituents listed in Table ~~5-2~~ **semi-annually, and for Appendix IX constituents on an annual basis.** The Owner and/or Operator may propose modifications to the list of Appendix IX constituents and the sampling locations after the first year ~~of sampling~~.

Frequency for Appendix IX sampling is set in the individual section, as well as in regulations. Table 2 (now relabeled as Table 7) summarizes the sampling frequencies. Because Appendix IX sampling is generally

discussed in the previous paragraphs of this section, and specifically discussed in other sections of this Permit, DTSC deleted the first sentence. Sampling frequency and constituents for the different monitoring programs is adequately discussed elsewhere.

~~The Owner and/or Operator will analyze samples for those constituents listed in Table 5 semi-annually, and for Appendix IX constituents on an annual basis.~~ The Owner and/or Operator may propose modifications to the list of Appendix IX constituents and the sampling locations after the first year of sampling.

DTSC researched the second sentence of this paragraph and could not find a citing authority. Although other, general permit variance mechanisms may apply, DTSC could not find anything to support the modification of Appendix IX sampling requirements after performing one year of sampling. Therefore, DTSC decided to delete this sentence, which resulted in deletion of this entire paragraph.

~~The Owner and/or Operator will analyze samples for those constituents listed in Table 5 semi-annually, and for Appendix IX constituents on an annual basis. The Owner and/or Operator may propose modifications to the list of Appendix IX constituents and the sampling locations after the first year.~~

31) To summarize, DTSC changed Section V.F APPENDIX IX MONITORING as follows:

1995 PERMIT TEXT:

F. APPENDIX IX MONITORING

Unless all constituents of concern at the point of compliance are reduced to "non-detectable" for non-naturally occurring organic species and to background for any naturally occurring organic and inorganic species, the Owner and/or Operator shall monitor Point of Compliance Wells RS-8, HAR-14, HAR-15, and HAR-7 for all Appendix IX constituents annually as specified in Table 2 (22 CCR 66264 Appendix IX).

The Owner and/or Operator will analyze samples for those constituents listed in Table 5 semi-annually, and for Appendix IX constituents on an annual basis. The Owner and/or Operator may propose modifications to the list of Appendix IX constituents and the sampling locations after the first year.

BOEING REQUEST:

F. APPENDIX IX MONITORING

The owner or operator shall analyze samples from all monitoring points in the affected medium for all constituents contained in Appendix IX (Cal. Code Regs., tit. 22, div. 4.5, chapter 14, appendix IX) at least annually to determine whether additional hazardous constituents are present and, if so, at what concentration(s). [Cal. Code Regs., tit. 22, § 66264.99, subsec. (e)(6)]

Unless indicated otherwise in this permit, Appendix IX sampling at monitoring points in the affected medium shall include monitoring points at the point of compliance, monitoring points in the detection monitoring program and monitoring points in the evaluation monitoring program that have been established for each regulated units. Interim Corrective Measures wells are not subject to the annual Appendix IX sampling requirements. If the owner or operator finds Appendix IX constituents in the groundwater that are not already identified in the permit as constituents of concern, the owner or operator may resample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the owner or operator shall report the concentration of these additional constituents to the Department by certified mail within seven days after the completion of the second analysis and the Department shall add them to the list of constituents of concern specified in the facility permit unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit. If the owner or operator does not resample, then the owner or operator shall report the concentrations of these additional constituents to the Department by certified mail within seven days after completion of the initial analysis and the Department shall add them to the list of constituents of concern specified in the facility permit unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit. [Cal. Code Regs., tit. 22 § 66264.99, subsec. (e)(6)]

Unless all constituents of concern at the point of compliance are reduced to "non-detectable" for non-naturally occurring organic species and to background for any naturally occurring organic and inorganic species, the Owner and/or Operator shall monitor Point of Compliance Wells RS-8, HAR-14, HAR-15, and HAR-7 for all Appendix IX constituents annually as specified in Table 2 (22 CCR 66264 Appendix IX).

The Owner and/or Operator will analyze samples samples on the frequency and for those constituents listed in Table 5-2 semi-annually, and for Appendix IX constituents on an annual basis. The Owner and/or Operator may propose modifications to the list of Appendix IX constituents and the sampling locations after the first year of sampling.

DTSC MODIFICATION:

F. APPENDIX IX MONITORING

The owner or operator shall analyze samples from all monitoring points in the affected medium (groundwater, surface water or the unsaturated zone) for all constituents contained in Appendix IX (Cal. Code Regs., tit. 22, div. 4.5, chapter 14, appendix IX) at least annually to determine whether additional hazardous constituents are present and, if so, at what concentration(s). [Cal. Code Regs., tit. 22, § 66264.99, subsec. (e)(6)]

Unless indicated otherwise in this permit, Appendix IX sampling at monitoring points in the affected medium shall include monitoring points at the point of compliance, monitoring points in the detection monitoring program and monitoring points in the evaluation monitoring program that have been established for each regulated units. Appendix IX sampling is not required for monitoring points outside the affected medium until and/or unless releases from a regulated unit reach or is suspected to have reached the monitoring point.

If the owner or operator finds Appendix IX constituents in the groundwater, surface water or the unsaturated zone that are not already identified in the permit as constituents of concern, the owner or operator may resample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the owner or operator shall report the concentration of these additional constituents to the Department by certified mail within seven days after the completion of the second analysis and the Department shall add them to the list of constituents of concern specified in the facility permit unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit. If the owner or operator does not resample, then the owner or operator shall report the concentrations of these additional constituents to the Department by certified mail within seven days after completion of the initial analysis and the Department shall add them to the list of constituents of concern specified in the facility permit unless the owner or operator demonstrates to the satisfaction of the Department that the constituent is not reasonably expected to be in or derived from waste in the regulated unit. [Cal. Code Regs., tit. 22 § 66264.99, subsec. (e)(6)]

Unless all constituents of concern at the point of compliance are reduced to "non-detectable" for non-naturally occurring organic species and to background for any naturally occurring organic and inorganic species, the Owner and/or Operator shall monitor Point of Compliance Wells RS-8, HAR-14, HAR-15, and HAR-7 for all Appendix IX constituents annually as specified in Table 2 (22 CCR 66264 Appendix IX).

The Owner and/or Operator will analyze samples for those constituents listed in Table 5 semi-annually, and for Appendix IX constituents on an annual basis. The Owner and/or Operator may propose modifications to the list of Appendix IX constituents and the sampling locations after the first year.

[GENERAL WATER QUALITY MONITORING]

32) In both permits, DTSC accepted the requested deletion of Section V.G.1.e. For clarification, DTSC added a reference to well construction specifications given in California regulations:

- e. All monitoring wells shall be constructed properly to enable collection of representative groundwater samples, including the specifications under California Code of Regulations, title 22, section 66264.97, subsections (b)(4) through (b)(7). Not all current wells have adequate seals to prevent the borehole from acting as a conduit for the vertical migration of contamination. The Owner and/or Operator will videotape all Chatsworth Formation wells included in this program to determine if the wells have adequate seals and provide a document, 1 year from the effective date of this

~~Permit, which demonstrates that all wells in the monitoring program have adequate seals and are not acting as conduits for vertical migration of contaminants.~~ Extraction wells and water supply wells are not subject to this requirement.

Subsection (b)(4) and (b)(6) require wells to be constructed so they do not provide a conduit for the spread of contamination. These requirements are just as valid for extraction wells and water supply wells. Extraction wells and water supply wells are not exempted from these requirements. Therefore, DTSC decided to delete the last sentence in Permit Section V.G.1.e for both permits.

- e. All monitoring wells shall be constructed properly to enable collection of representative groundwater samples, including the specifications under California Code of Regulations, title 22, section 66264.97, subsections (b)(4) through (b)(7). ~~Not all current wells have adequate seals to prevent the borehole from acting as a conduit for the vertical migration of contamination. The Owner and/or Operator will videolog all Chatsworth Formation wells included in this program to determine if the wells have adequate seals and provide a document, 1 year from the effective date of this Permit, which demonstrates that all wells in the monitoring program have adequate seals and are not acting as conduits for vertical migration of contaminants. Extraction wells and water supply wells are not subject to this requirement.~~

- 33) DTSC deleted paragraph V.G.1.g from both permits and replaced it with paragraphs V.G.1.g, -h, and -i. These additional paragraphs expand on the regulatory requirements for establishing monitoring systems.

- ~~g. Surface water and vadose zone monitoring will not be required under the Groundwater Monitoring section of this Permit because the need for these two items will be addressed under the Corrective Action for Solid Waste Management Units, Section VII.~~
- g. The Owner and/or Operator shall establish a surface water monitoring system to monitor each surface water body that could be affected by a release from the regulated unit. Each surface water monitoring system shall include the appropriate items under California Code of Regulations, title 22, section 66264.97, subsection (c)(2).
- h. Except as otherwise provided, the Owner and/or Operator shall establish an unsaturated zone monitoring system for each regulated unit. The unsaturated zone monitoring system shall include the appropriate items under California Code of Regulations, title 22, section 66264.97, subsections (d)(2), (d)(3), and (d)(4).
- i. Unsaturated zone monitoring is required at all new regulated units unless the Owner and/or Operator demonstrates to the satisfaction of the Department that such methods of unsaturated zone monitoring cannot provide an indication of a release from the regulated unit. For a regulated unit that has operated or has received all permits necessary for construction and operation before July 1, 1991, unsaturated zone monitoring is required unless the Owner and/or Operator demonstrates to the satisfaction of the Department that either there is no unsaturated zone monitoring device or method designed to operate under the subsurface conditions existent at that waste management unit or the installation of unsaturated zone monitoring devices would require unreasonable dismantling or relocating of permanent structures. [Cal. Code Regs., title 22, § 66264.97, subsec. (d)(5)].

- 34) In Section V.G.2.b "Sampling and Analysis Procedures", the paragraph was altered to match the DTSC decision on sampling frequency for detection monitoring and evaluation monitoring. Boeing's permit modification request proposed deleting the frequency information and referring to Table 2 for the frequency information. (Table 2 was renamed to Table 7).

1995 PERMIT TEXT:

- b. Groundwater sampling shall be conducted quarterly for detection monitoring wells and semiannually for evaluation monitoring wells as specified in Table 2. The sampling should coincide with the anticipated maximum and minimum groundwater elevation levels.

BOEING'S REQUEST:

- b. Groundwater sampling shall be conducted ~~quarterly for detection monitoring wells and semiannually for evaluation monitoring wells as per the frequency~~ specified in Table 2. The sampling should coincide with the anticipated maximum and minimum groundwater elevation levels.

DTSC MODIFICATION:

- b. Groundwater sampling shall be conducted quarterly for detection monitoring wells and ~~semiannually for~~ evaluation monitoring wells ~~as specified in Table 2 for at least one year. DTSC will review this data. After one year, sampling frequency for detection monitoring and evaluation monitoring wells may be reduced to semi-annual, unless the data indicates that more frequent sampling is warranted.~~ The quarterly and semi-annual sampling should coincide with the anticipated maximum and minimum groundwater elevation levels.

- 35) In both permits, Section V.G.2.f (now relabeled as V.G.2.e) contained the sentence "Turbidity may be measured in the laboratory rather than in the field." Boeing's request did not alter this sentence. DTSC's Geological Services Unit reviewed this sentence and determined that it contradicted the Groundwater Sampling and Analysis Plan which called for using turbidity as a field indicator for sampling stability. Therefore, DTSC deleted this sentence. Other proposed changes to this paragraph were accepted by DTSC.

- ~~fe.~~ The Owner and/or Operator shall accurately determine the groundwater surface elevation (to calculate purging volume) and field parameters (temperature, electrical conductivity, turbidity, oxidation/reduction potential, and pH) at each well each time the groundwater is sampled. ~~Turbidity may be measured in the laboratory rather than in the field.~~ Details of the collection procedures will be specified in the WQSAP.

[DETECTION MONITORING]

- 36) In both permits, a table was added to section V.H containing the detection monitoring wells. This table is labeled "TABLE 5 -- DETECTION MONITORING PROGRAM WELLS".
- 37) In both permits, Section V.H.2 was modified. The section was split into three paragraphs. The middle subsection dealing with background wells was removed because background wells were adequately described in Section V.D.2. Sampling frequency for detection monitoring wells was added to V.H.2.

Boeing proposed detection monitoring wells be sampled quarterly for one year and every 5 years thereafter. DTSC set the sampling frequency for detection monitoring wells to at least one full year of quarterly sampling followed by semi-annual sampling if warranted.

1995 PERMIT:

The detection monitoring system will comply with the provisions of 22 CCR 66264.98, which includes the list of constituents of concern (Table 3), concentration limits, and establishes a water quality protection standard. For the first year of this Permit, the Owner and/or Operator shall collect samples from the designated background wells quarterly for the constituents listed in Tables 3 & 4. Subsequently, samples shall be collected quarterly for those constituents listed in Table 5. The Owner and/or Operator shall collect samples from the detection monitoring wells quarterly, for the monitoring parameters listed in Table 6. In addition, Boeing-Rocketdyne shall monitor these wells for all constituents of concern every 5 years.

BOEING'S REQUEST:

2. The detection monitoring system will comply with the provisions of ~~22 CCR 66264.98~~ California Code of Regulations, title 22, section 66264.98, which includes the list of constituents of concern (Table 3), concentration limits, and establishes a water quality protection standard. For the first year of this Permit, the Owner and/or Operator shall collect samples from the designated background wells quarterly for the constituents listed in Tables 3 & 4. Subsequently, samples shall be collected ~~quarterly for those constituents listed in Table 5 per the frequency specified in Table 2. The Owner and/or Operator shall collect samples from the detection monitoring wells quarterly, for the monitoring parameters listed in Table 6.~~ In addition, Boeing-Rocketdyne shall monitor these wells for all constituents of concern every 5 years.

DTSC MODIFICATION:

2. The detection monitoring system will comply with the provisions of ~~22 CCR 66264.98~~ California Code of Regulations, title 22, section 66264.98, which includes the list of constituents of concern (Table 34), concentration limits, and establishes a water quality protection standard.

~~For the first year of this Permit, the Owner and/or Operator shall collect samples from the designated background wells quarterly for the constituents listed in Tables 3 & 4. Subsequently, samples shall be collected quarterly for those constituents listed in Table 5.~~

For at least one year, the Owner and/or Operator shall collect samples from the detection monitoring wells (Table 5) quarterly; for the background monitoring parameters listed in Table 63 and quarterly for the constituents of concern listed in Table 4. In addition, Boeing-Rocketdyne shall monitor these wells for all constituents of concern every 5 years. DTSC will review this data. After one year, the detection monitoring wells may be sampled semi-annually for Table 4 Constituent of Concerns and annually for Table 3 Background Parameters, unless the data indicates more frequent sampling is warranted.

38) In both 1995 Post Closure Permits, the following paragraph is written under Section V.H.5:

5. Although vadose zone monitoring is not specifically required under this Permit, since a release to groundwater has been confirmed, the Owner and/or Operator will be required to perform additional vadose zone assessment in their RFI. Findings of additional vadose zone contamination may necessitate the modification of this Permit.

Boeing's request essentially leaves this paragraph unchanged (although the organizational numbering is changed from V.H.5 to V.H.3.e). DTSC, however, added regulatory language in a previous section (V.G.1) which echos regulations requiring vadose zone monitoring. DTSC, therefore, has deleted paragraph V.H.5 from this section of the permit. No further format adjustment is needed.

- ~~5. Although vadose zone monitoring is not specifically required under this Permit, since a release to groundwater has been confirmed, the Owner and/or Operator will be required to perform additional vadose zone assessment in their RFI. Findings of additional vadose zone contamination may necessitate the modification of this Permit.~~

[EVALUATION MONITORING]

39) In both 1995 Post Closure Permits, the following section is written under Section V.I "EVALUATION MONITORING", 2nd half of second paragraph:

If the Owner and/or Operator finds Appendix IX constituents that are not already identified as constituents of concern, the Owner and/or Operator may re-sample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the Owner and/or Operator shall report the concentration of these additional constituents to the Department in the next quarterly progress report. The Department will add them to the list of constituents of concern unless the Owner and/or Operator demonstrates that a source other than the Santa Susana facility caused the evidence.

Boeing's request keeps this text unchanged. Permit Section V.F "APPENDIX IX MONITORING", however, was modified with the regulatory language added that describes the procedure for when a new Appendix IX constituent is discovered. The regulatory requirement is slightly different than the subject paragraph, above. DTSC decided to delete the Appendix IX section from V.I because this issue is already adequately discussed in V.F, and because the V.I version has errors.

~~If the Owner and/or Operator finds Appendix IX constituents that are not already identified as constituents of concern, the Owner and/or Operator may re-sample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the Owner and/or Operator shall report the concentration of these additional constituents to the Department in the next quarterly progress report. The Department will add them to the list of constituents of concern unless the Owner and/or Operator demonstrates that a source other than the Santa Susana facility caused the evidence.~~

- 40) For both permits, in paragraph V.I.3, DTSC removed references to point-of-compliance wells from this paragraph. Point-of-compliance wells are discussed in section V.D.1.
- 41) For both permits, sampling parameters and frequencies for the evaluation monitoring wells were discussed in section V.I.3.

For evaluation monitoring wells known or suspected to be in the affected media from a release of a regulated unit (surface impoundment), DTSC set the sampling at quarterly for constituents of concern for at least one year, and semi-annual thereafter. Boeing proposed sampling once for new wells and every 5 years thereafter.

For evaluation wells in the affected media, DTSC set annual sampling for Appendix IX constituents, which is consistent with Boeing's modification request.

For evaluation monitoring wells not yet impacted, DTSC set at least one year of quarterly sampling for constituents of concern, and semi-annual thereafter. Sampling for Appendix IX will not be required for those wells not in the affected media.

After one-year of quarterly data, the evaluation monitoring wells may be sampled semi-annually for constituents of concern, unless the data indicates more frequent sampling is warranted.

Table 6 indicates which evaluation monitoring wells are known or suspected to be in the affected media from the release of one or more of the surface impoundments. Section V.I.3 have been modified to reflect this information.

1995 PERMIT:

As stated above, the Owner and/or Operator will monitor groundwater to evaluate changes in water quality partially resulting from releases from the regulated units. Table 2 shows the wells that are to be sampled pursuant to this evaluation monitoring program and complies with the provisions of 22 CCR 66264.97. The Owner and/or Operator shall sample each evaluation monitoring well, except the point-of-compliance wells, for the monitoring parameters listed in Table 6 on a semi-annual basis. Every five years the evaluation monitoring wells will also be sampled for all constituents of concern (Table 3). The point-of-compliance wells will be sampled semi-annually for the monitoring parameters listed in Table 5 and for Appendix IX parameters annually. If the Owner and/or Operator finds Appendix IX constituents that are not already identified as constituents of concern, the Owner and/or Operator may re-sample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the Owner and/or Operator shall report the concentration of these additional constituents to the Department in the next quarterly progress report. The Department will add them to the list of constituents of concern unless the Owner and/or Operator demonstrates that a source other than the Santa Susana facility caused the evidence.

BOEING'S REQUEST:

3. As stated above, the Owner and/or Operator will monitor groundwater to evaluate changes in water quality partially resulting from releases from the regulated units. Table 2 shows the wells that are to be sampled pursuant ~~to for~~ this evaluation monitoring program ~~and complies with the provisions of 22 CCR 66264.97~~. The Owner and/or Operator shall sample each evaluation monitoring well, except the point-of-compliance wells, for the monitoring parameters listed in Table 62 ~~on a semi-annual basis the frequency stipulated in Table 2~~. Every five years the evaluation monitoring wells will also be sampled for all constituents of concern (Table 3). The point-of-compliance wells will be sampled ~~semi-annually for the monitoring parameters listed in Table 5 and for Appendix IX parameters annually~~. If the Owner and/or Operator finds Appendix IX constituents that are not already identified as constituents of concern, the Owner and/or Operator may re-sample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the Owner and/or Operator shall report the concentration of these additional constituents to the Department in the next quarterly progress report. The Department will add them to the list of constituents of concern unless the Owner and/or Operator demonstrates that a source other than the Santa Susana facility caused the evidence.

DTSC MODIFICATIONS:

3. As stated above, the Owner and/or Operator will monitor groundwater to evaluate changes in water quality partially resulting from releases from the regulated units. Table 26 shows the wells that are to be sampled pursuant ~~to for~~ this evaluation monitoring program ~~and complies with the provisions of 22 CCR 66264.97~~. Each regulated unit is associated with the wells to be used for the evaluation monitoring program for that regulated unit. Table 6 also indicates which evaluation monitoring program wells are known or suspected to be in the affected media from the release of a regulated unit.

The Owner and/or Operator shall sample each evaluation monitoring well, ~~except the point-of-compliance wells~~, for the ~~monitoring parameters constituents of concern~~ listed in Table 64 on a ~~semi-annual~~ quarterly basis. ~~Every five years the evaluation monitoring wells will also be sampled for all constituents of concern (Table 3).~~

For at least one year, (The Owner and/or Operator shall sample each evaluation monitoring well, except the point-of-compliance wells, for the monitoring parameters constituents of concern listed in Table 64 on a semi-annual quarterly basis. Every five years the evaluation monitoring wells will also be sampled for all constituents of concern (Table 3). DTSC will review this data. After one year, the evaluation monitoring wells may be sampled semi-annually for Table 4 Constituents of Concern, unless the data indicates more frequent sampling is warranted.

The point-of-compliance wells will be sampled semi-annually for the monitoring parameters listed in Table 5 and for Appendix IX parameters annually.

Those evaluation monitoring wells identified as known or suspected to be in the affected media by the release from a regulated unit shall be sampled for Appendix IX constituents on an annual basis. If the Owner and/or Operator finds Appendix IX constituents that are not already identified as constituents of concern, the Owner and/or Operator may re-sample within one month and repeat the analysis for those constituents. If the second analysis confirms the presence of new constituents, the Owner and/or Operator shall report the concentration of these additional constituents to the Department in the next quarterly progress report. The Department will add them to the list of constituents of concern unless the Owner and/or Operator demonstrates that a source other than the Santa Susana facility caused the evidence.

- 42) In both permits, a table was added to section V.I, just after section V.I.3, which contain the evaluation monitoring wells for regulated units in that permit. In both permits, this table is labeled "TABLE 6 -- EVALUATION MONITORING PROGRAM WELLS".

- 43) In both permits, the paragraph in section V.I.4 has been altered, but essentially maintains the sampling conditions for the extraction wells.

1995 PERMIT:

Since the Owner and/or Operator is conducting interim corrective measures (extraction and treatment), monitoring at all extraction wells will be required. The Owner and/or Operator shall collect samples for the constituents listed in Table 5, semi-annually. In the case of shallow wells that do not have sufficient water to extract, monitoring will be required only when extraction is occurring, up to a frequency of quarterly. Table 2 includes the extraction wells which are part of the evaluation monitoring program.

BOEING'S REQUEST:

4. ~~Since~~Because the Owner and/or Operator is conducting interim corrective measures (extraction and treatment), monitoring at all extraction wells will be required. The Owner and/or Operator shall collect samples for the constituents listed and on the frequency listed in Table 5 2, semi-annually. In the case of shallow wells that do not have sufficient water to extract, monitoring will be required only when extraction is occurring, up to ~~a the~~ frequency of quarterly listed in Table 2. Table 2 includes the extraction wells which are part of the ~~evaluation~~ regulated unit monitoring program.

DTSC MODIFICATION:

4. ~~Since~~Because the Owner and/or Operator is conducting interim corrective measures (extraction and treatment), monitoring at all extraction wells will be required. Table 7 lists the extraction wells for the interim corrective measures that are connected to the permitted treatment systems.

The Owner and/or Operator shall collect samples from the extraction wells (Table 7) on a semi-annual basis and tested for the constituents all the constituents of concern listed in Table 5 4, semi-annually including those constituents designated for a specific regulated unit. In the case of shallow wells that do not have sufficient water to extract, monitoring will be required only when extraction is occurring, up to a frequency of ~~quarterly~~semi-annually. ~~Table 2 includes the extraction wells which are part of the evaluation monitoring program.~~

- 44) ADDITIONAL EVALUATION WELLS FOR ABSP: Boeing proposes the following wells for the evaluation monitoring program of the Alfa/Bravo Skim Pond in Area II: HAR-09, HAR-19, and a new well designated as PC-02 to be constructed. DTSC accepts these wells.

DTSC added the following wells for monitoring the perched zone for the evaluation monitoring program at ABSP: HAR-09, HAR-11, PZ-060, PZ-070, and RS-08. All of these wells would be considered in the affected media from previous releases of ABSP. Well HAR-09 is already proposed by Boeing. Well HAR-11 was included in the 1995 permit as an evaluation well, but proposed as a background well in Boeing request. DTSC determined HAR-11 is not acceptable as a background well and is reinstating it as an evaluation well. Wells PZ-060, PZ-070 and RS-08 were not mentioned in the 1995 Permit and are not part of Boeing's modification request. DTSC is adding them to ABSP's evaluation monitoring program.

DTSC added the following wells for monitoring the uppermost aquifer for the evaluation monitoring program at ABSP: HAR-20, HAR-21, RD-49A, RD-49B, and RD-49C. All of these wells are considered in the affected media from previous releases of ABSP. None of these wells were included in the 1995 Permit or in Boeing's modification request, but are being included by DTSC as part of ABSP's evaluation monitoring program.

- 45) **ADDITIONAL EVALUATION WELLS FOR DELTA:** Boeing proposes the following wells for the evaluation monitoring program of the Delta Pond in Area II: HAR-07, HAR-27, HAR-28, and HAR-29. DTSC accepts these wells.

DTSC added the following wells for the evaluation monitoring program at Delta: HAR-08. Boeing proposed HAR-08 as a background well for Delta, which DTSC rejected because HAR-08 is impacted by previous releases from Delta. Therefore, DTSC will use this well for the evaluation monitoring program at Delta. HAR-08 is considered to be in the affected media of previous releases from Delta.

- 46) **ADDITIONAL EVALUATION WELLS NOT IN AFFECTED MEDIA:** DTSC's Geological Services Unit (GSU) reviewed the wells which were removed per Boeing's permit modification request. GSU recommended the reinstatement of many wells to be included in the evaluation monitoring program. These additional wells would not be considered in the affected media from a release of a regulated unit. These wells would require the same sampling and analysis as those wells in the affected media except for Appendix IX sampling. Appendix IX sampling would be required for all wells known or suspected to be in the affected media from a release of a regulated unit. The additional GSU wells would not require Appendix IX because they are not considered in the affected media. This designation may change after review of the data. However, the purpose was to establish evaluation wells outside the known contaminated areas to provide an indication of when, if ever, the contamination reached these wells. These wells are sometimes referred to as 'sentinel wells' or 'boundary wells'.

GSU recommended the addition of sixty (60) sentinel wells to be included in the evaluation monitoring program. None of GSU's 60 wells were proposed by Boeing to be used for monitoring wells and none of these wells have been added to the monitoring program for other reasons.

DTSC reviewed GSU's recommended wells and decided to remove eleven (11) wells used as in-situ extraction wells for the ex-situ treatment system. The use of extraction wells as monitoring wells created potential conflicts. The in-situ extraction system and ex-situ treatment system are both permitted in the Post Closure Permits. Making changes to the extraction and/or treatment system went beyond the scope of the current permit modification. Additional information would be needed to make the determination of using the extraction wells as monitoring wells.

Forty (40) of the GSU-recommended sentinel wells were part of the groundwater program under the unmodified post closure permit (1995 Permit) as either background monitoring wells, detection monitoring program wells or evaluation monitoring program wells. These wells were proposed for removal from the groundwater programs per Boeing's permit modification request. DTSC denies Boeing's request to remove these 40 wells and includes them in the evaluation monitoring program of the potentially unaffected media.

Nine (9) of the GSU-recommended sentinel wells were not mentioned in the unmodified post closure permit (1995 Permit) or in Boeing's permit modification request. All of these wells are currently existing and being used under other monitoring programs. DTSC decided to include these 9 additional wells in the evaluation monitoring program of the potentially unaffected media.

The following is a list of the GSU-recommended sentinel wells. The first column is the well recommended by GSU. The second column indicates the well's use in the unmodified post closure permit. The third column is the assigned regulated unit(s) for the evaluation monitoring program. The list has been reordered to group the additional wells per regulated unit. The extraction wells have not been included in the permit modification, and are listed here with a strikethrough line. The remaining, unstruck wells have been added to the indicated evaluation monitoring program without an "affected media" indication.

<u>GSU Recommended Well</u>	<u>Unmodified 1995 Permit Status</u>	<u>Assigned Regulated Unit</u>
RD-68A	--	ABSP
RD-68B	--	ABSP
WS-04A	dmp	ABSP
WS-06	ext	ABSP
WS-09	ext	ABSP
HAR-25	--	APTF
OS-17	--	APTF
OS-24	--	APTF
OS-26	--	APTF
RD-01	ext	APTF
RD-02	ext	APTF
RD-03	emp	APTF
RD-04	ext	APTF
RD-36A	emp	APTF
RD-36B	emp	APTF
RD-36C	emp	APTF
RD-36D	emp	APTF
RD-37	dmp	APTF
RD-38A	emp	APTF
RD-38B	emp	APTF
RD-39A	dmp	APTF
RD-39B	dmp	APTF
RD-43A	dmp	APTF
RD-43B	dmp	APTF
RD-43C	dmp	APTF
RD-45A	emp	APTF
RD-45B	emp	APTF
RD-45C	emp	APTF
RD-46A	emp	APTF
RD-46B	emp	APTF
RD-48A	bkg	APTF
RD-48B	bkg	APTF
RD-48C	bkg	APTF
RD-51A	emp	APTF
RD-51B	emp	APTF
RD-51C	dmp	APTF
RD-52A	emp	APTF
RD-52B	emp	APTF
RD-52C	dmp	APTF
RD-53	--	APTF
RS-07	emp	APTF
WS-05	ext	APTF
RD-05A	emp	Delta
RD-05B	dmp	Delta
RD-05C	dmp	Delta

HAR-05	--	SPA
HAR-23	emp	SPA
ES-14	ext	STL-IV
ES-24	ext	STL-IV
ES-32	ext	STL-IV
HAR-17	ext	STL-IV
HAR-32	--	STL-IV
RD-06	bkg	STL-IV
RD-55A	emp	STL-IV
RD-55B	emp	STL-IV
RD-58A	emp	STL-IV
RD-58B	dmp	STL-IV
RD-58C	dmp	STL-IV
RS-13	emp	STL-IV
WS-09A	ext	STL-IV

--, not mentioned
bkg, background well
dmp, detection monitoring program
emp, extraction monitoring program
ext, extraction well for the ex-situ groundwater remediation facilities

[WATER QUALITY MONITORING PROGRAM TABLE]

- 47) Table 2 "Water Quality Monitoring Program" was moved to the back of Part V and renumbered as Table 7.
- 48) The columns for Table 2, now labeled as Table 7, have been changed. The column "Sample Frequency" has been deleted and the information distributed to the appropriate columns.

1995 PERMIT and BOEING'S PERMIT MODIFICATION REQUEST:

TABLE 2
WATER QUALITY MONITORING PROGRAM

	Sampling Frequency	Monitoring Parameters	COC* (Table 3)	Annual Appendix IX

DTSC MODIFICATION:

TABLE 7
WATER QUALITY MONITORING PROGRAM
AREA I and III

GROUNDWATER MONITORING PROGRAM	GENERAL BACKGROUND PARAMETERS (Table 3)	CONSTITUENTS OF CONCERN (Table 4)	APPENDIX IX

TABLE 7
WATER QUALITY MONITORING PROGRAM
AREA II

GROUNDWATER MONITORING PROGRAM	GENERAL BACKGROUND PARAMETERS (Table 3)	CONSTITUENTS OF CONCERN (Table 4)	APPENDIX IX

- 49) The monitoring wells, extraction wells and ex-situ treatment systems were divided into their respective permit, per Boeing's modification request.

Under the Interim Corrective Measure Wells, extraction well RD-9 was removed from the Area I/III Post Closure Permit. Extraction well RD-9 was already included in the Area II Post Closure Permit.

- 50) The detection monitoring portion of Table 7 (previously Table 2) "Water Quality Monitoring Program" was moved past the list of background wells and past the list of point-of-compliance wells.
- 51) In both permits, Section V.D.2 discussed Background Wells. The new Table 2 lists out the background wells assigned for each regulated unit. For Table 7 (previously Table 2) "Water Quality Monitoring Program", a section of the table has the subheading "Background Monitoring Wells". All the background wells are then listed, with the corresponding regulated unit on the same line. Some show multiple regulated units for one background well. According to Section V.D.2 "Background Monitoring Wells", sampling of the background wells shall be quarterly for one year for Table 3 Background General Water Quality Parameters and quarterly for one year for Table 4 Constituents of Concern. After one-year (4 quarterly samples), the testing for Table 3 and Table 4 parameters shall occur annually.

- 52) In both permits, Section V.D.1 discuss Point-of-Compliance Wells. Table 1 lists the point-of-compliance wells assigned for each regulated unit. For Table 7 (previously Table 2) "Water Quality Monitoring Program", a section of the table has the subheading "Point of Compliance Monitoring Wells". All the point-of-compliance wells are then listed with the corresponding regulated unit on the same line. Some show multiple regulated units for one point-of-compliance well. According to Section V.D.1 "Point-of-Compliance" shall be sampled quarterly for Table 4 Constituents of Concern and annually for Appendix IX parameters. After one-year (4 quarters) of Table 4 Constituent of Concern sampling, sampling may occur semi-annual, unless the data indicates more frequent sampling is warranted.
- 53) In both permits, Section V.H discuss the Detection Monitoring Program. Table 5 lists the detection monitoring program wells assigned for each regulated unit. In Table 7 (previously Table 2) "Water Quality Monitoring Program", a section of the table has the subheading "Detection Monitoring Program Wells". All the detection monitoring program wells are then listed with the corresponding regulated unit on the same line. Some show multiple regulated units for one detection monitoring program well. According to Section V.H.2, the detection monitoring program wells shall be sampled quarterly for background monitoring parameters and quarterly for constituents of concern for at least one year. Then, sampling may occur semi-annually for constituents of concern and annually for background parameters, unless the data indicates more frequent sampling is warranted.
- 54) In both permits, Section V.I discuss the Evaluation Monitoring Program. Table 6 lists the evaluation monitoring program wells assigned for each regulated unit. In Table 7 (previously Table 2) "Water Quality Monitoring Program", a section of the table has the subheading "Evaluation Monitoring Program Wells". All the evaluation monitoring program wells are then listed with the corresponding regulated unit on the same line. Some show multiple regulated units for one evaluation monitoring program well. According to Section V.D.3, for at least one-year, the Owner and/or Operator shall sample each evaluation monitoring well for the constituents of concern on a quarterly basis. After one-year, the evaluation monitoring wells may be sampled semi-annually for Table 4 Constituents of Concern, unless the data indicates more frequent sampling is warranted. Those evaluation monitoring wells identified as known or suspected to be in the affected media from the release of a regulated unit shall be sampled for Appendix IX constituents on an annual basis.
- 55) In both permits, Section V.D.I.4 (under the Evaluation Monitoring Program) describes the sampling for the extraction wells connected to the permitted treatment systems. The extraction and treatment system is operating as a corrective action interim measure. The list of extraction wells are listed in Table 7 (previously Table 2) under the subheading "Corrective Action Interim Measure, Extraction Well System". Each extraction well is listed along with the permitted treatment unit connected to the extraction well. Groundwater from some extraction wells are permitted to be treated at more than one permitted treatment unit. According to Section V.D.I.4, the Owner and/or Operator shall collect samples from the extraction wells (Table 7) on a semi-annual basis and tested for all the constituents of concern listed in Table 4, including those constituents designated for a specific regulated unit. In the case of shallow wells that do not have sufficient water to extract, monitoring will be required only when extraction is occurring, up to a frequency of semi-annually.
- 56)* **APTF NON-COMPLIANT WELLS:** After reviewing pertinent information on wells for the APTF RCRA groundwater monitoring program, DTSC has determined that the construction of the following wells are not in compliance due to their long screen interval or lack of casing:

HAR-01	emp	APTF-1 and APTF-2
HAR-16	poc, dmp, emp	APTF-1 and APTF-2
HAR-24	bkg	APTF-1 and APTF-2

These wells require permanent retrofit, abandonment, and/or replacement. If they cannot be brought into compliance, then alternative wells must be suggested and/or constructed. These wells shall be used as indicated in the permit until their retrofit and/or replacement has been determined.

- 57) In both permits, Table 7 in Part VI lists the "Tanks/Containers Containment Volumes/Capacity" for each of the regulated treatment units. This table number was adjusted, from Table 7 to Table 8. The contents were changed according to Boeing's modification request. No other modifications were made to this table at this time.
- 58) In both permits, Table 8 in Part VII lists the "Solid Waste Management Units, Areas I, II, III, IV, and Buffer Zone". This table number was adjusted, from Table 8 to Table 9. No other modifications were made to this table at this time.
- 59)* California Code of Regulations, title 22, Section 66264.142 requires owners or operator of a hazardous waste management facility to prepare and submit a detailed written estimate, in current dollars, of the cost of closing a treatment/storage facility and/or the cost of maintaining a postclosure facility. DTSC reviewed the cost estimates for the two post closure permits and found them inadequate in detail. Please revise your cost estimates by December 31, 2004 to better reflect the activities discussed in the closure plan for the groundwater surface treatment systems discussed in the Operation Plan and the postclosure care of the closure surface impoundments discussed in the Post Closure Care Plan. Please be reminded that Boeing must provide financial assurance for closure and postclosure care for the facilities in the Postclosure Permit covering Area I and III under the EPA ID Number CAD093365435, as required by California Code of Regulations, title 22, Section 66264.143. The Postclosure Permit for Area II under EPA ID Number CA1800090010 is a federal facility and exempt from financial assurance requirements.

* An item marked with an asterisk requires further follow-up work.